

**ADDENDUM**  
**FACT SHEET FOR NPDES PERMIT WA-002918-1**  
**FACILITY NAME KING COUNTY – WEST POINT TREATMENT PLANT**  
**AND COMBINED SEWER OVERFLOW STORAGE AND TREATMENT**  
**FACILITIES**

**SUMMARY**

King County submitted a request for permit modification on March 25, 2004 for the addition of the **Elliott West Combined Sewer Overflow (CSO) Storage and Treatment Facility** to the West Point Treatment Plant NPDES Permit. King County submitted a request for permit modification on April 26, 2004 for the addition of the **Henderson/MLK CSO Storage and Treatment Facility** to the West Point Treatment Plant NPDES Permit. Each of these projects was originally proposed by King County and approved by the Department of Ecology as part of their Long Term Control Plan for reducing the volume of CSO discharges.

Both of King County's new CSO Treatment Facilities include a combination of storage of CSO flows and, beyond the capacity for storage, treatment of CSO flows prior to discharge to receiving waters. The treatment of CSO flows include some settling of solids in the storage tunnel and chlorination and then dechlorination of the effluent prior to discharge.

A summary of the permit limits that apply to the **Elliott West CSO Storage and Treatment Facility** are as follows:

All the limit parameters will be provided to the Department for report only from the effective date of the modified permit until June 1, 2005 which is the beginning of the "water-year". The water-year runs from June 1<sup>st</sup> through May 31<sup>st</sup> of the following year.

Interim limits apply during the period from effective date of the modified permit until December 31, 2005.

- Achieve 50% removal of Total Suspended Solids Removal (TSS % removal) on an annual average basis.
- Have no more than 0.3 ml/L/hr settleable solids average in the effluent on an annual basis.
- Have no more than 1.9 ml/L/hr settleable solids maximum in the effluent on a monthly average basis.

On January 1, 2006 and until the expiration date of the permit the following limits apply in addition to the limits stated above.

- Fecal Coliform Bacteria can not exceed 400 counts/100 mL on a monthly average basis.
- Total Residual Chlorine can not exceed 44 µg/L on a daily maximum basis.

A summary of the permit limits that apply to the **Henderson/MKL CSO Storage and Treatment Facility** are as follows:

Interim limits apply during the period from effective date of the modified permit until December 31, 2005.

- Achieve 50% removal of Total Suspended Solids Removal (TSS % removal) on an annual average basis.

- Have no more than 0.3 ml/L/hr settleable solids average in the effluent on an annual basis.
- Have no more than 1.9 ml/L/hr settleable solids maximum in the effluent on a monthly average basis.

On January 1, 2006 and until the expiration date of the permit the following limits apply in addition to the limits stated above.

- Fecal Coliform Bacteria can not exceed 400 counts/100 mL on a monthly average basis.
- Total Residual Chlorine can not exceed 39 µg/L on a daily maximum basis.

## TABLE OF CONTENTS

### SUMMARY 1

INTRODUCTION .....	1
BACKGROUND INFORMATION .....	2
DESCRIPTION OF THE FACILITY .....	2
History.....	2
Treatment Processes.....	2
Discharge Outfall .....	6
Residual Solids.....	6
PERMIT STATUS.....	7
SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT .....	7
WASTEWATER CHARACTERIZATION .....	7
PROPOSED PERMIT LIMITATIONS.....	7
DESIGN CRITERIA .....	8
Table 1: Design Parameters .....	8
TECHNOLOGY-BASED EFFLUENT LIMITATIONS .....	8
Table 2: Technology-based Limits .....	8
SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS .....	8
Numerical Criteria for the Protection of Aquatic Life.....	8
Numerical Criteria for the Protection of Human Health.....	9
Narrative Criteria .....	9
Antidegradation.....	9
Critical Conditions .....	9
Mixing Zones .....	9
Description of the Receiving Water.....	10
Surface Water Quality Criteria .....	10
Consideration of Surface Water Quality-Based Limits for Numeric Criteria .....	11
Human Health .....	15
Sediment Quality .....	15
MONITORING REQUIREMENTS .....	16
LAB ACCREDITATION .....	16
OTHER PERMIT CONDITIONS .....	16
REPORTING AND RECORDKEEPING .....	16
OPERATION AND MAINTENANCE (O&M).....	16
RESIDUAL SOLIDS HANDLING.....	16
EFFLUENT MIXING STUDY .....	17
COMBINED SEWER OVERFLOWS .....	17
OUTFALL EVALUATION .....	17
GENERAL CONDITIONS .....	17

PERMIT ISSUANCE PROCEDURES .....	17
PERMIT MODIFICATIONS .....	17
RECOMMENDATION FOR PERMIT ISSUANCE .....	17
REFERENCES FOR TEXT AND APPENDICES.....	18
APPENDIX A--PUBLIC INVOLVEMENT INFORMATION.....	19
APPENDIX B--GLOSSARY .....	20
APPENDIX C--TECHNICAL CALCULATIONS .....	25
APPENDIX D--RESPONSE TO COMMENTS .....	26

## INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION		
Applicant	King County Wastewater Treatment Division 201 South Jackson Street Seattle, Washington 98104-3855	
Facility Name and Address	<b>Elliott West CSO Storage and Treatment Facility</b> 545 Elliott Ave. W. Seattle, WA 98119	<b>Henderson/MLK CSO Storage and Treatment Facility</b> Outlet Regulator 9829 42nd Avenue South Seattle, Washington 98118
Type of Treatment:	Primary and Disinfection	Primary and Disinfection
Discharge Location	Elliott Bay Latitude: 47° 37' 3.18" N Longitude: -122° 21' 42.68" W	Duwamish River Latitude: 47° 30' 42.98" N Longitude: -122° 17' 50.48" W

GENERAL INFORMATION		
Water Body ID No.	1224026474620	1222956475022
Old WBID No.	WA-09-0010	WA-09-1010

## BACKGROUND INFORMATION

### DESCRIPTION OF THE FACILITY

#### HISTORY

King County submitted a request for permit modification on March 25, 2004 for the addition of the Elliott West CSO Storage and Treatment Facility to the West Point Treatment Plant NPDES Permit. King County submitted a request for permit modification on April 26, 2004 for the addition of the Henderson/MLK CSO Storage and Treatment Facility to the West Point Treatment Plant NPDES Permit. Each of these projects was originally proposed by King County and approved by the Department of Ecology as part of their Long Term Control Plan for reducing the volume of CSO discharges.

#### TREATMENT PROCESSES

Both of King County's new CSO Treatment Facilities include a combination of storage of CSO flows and, beyond the capacity for storage, treatment of CSO flows prior to discharge to receiving waters. The treatment of CSO flows include some settling of solids in the storage tunnel and chlorination and then dechlorination of the effluent prior to discharge. Following is a more detailed description of each of the facilities.

#### Elliott West CSO Storage and Treatment Facility-

As described in the Ecology's Facility Plan approval letter dated October 19, 1998<sup>1</sup>, this facility includes the following:

- *Connection with Seattle's improved conveyance facilities on the south and east sides of Lake Union. Facilities include a structure located at Valley Street and Fairview Avenue North that will divert high flows to the CSO tunnel, and a pipeline along Valley and Broad Streets to the east tunnel portal.*
- *South Lake Union Conveyance Facilities. Two diversion/regulator structures and three 54- to 84-inch diameter pipelines to convey flows to a new Mercer Street Tunnel.*
- *Denny Area Conveyance Facilities. Two diversion/control structures and three pipelines to convey flows to the new tunnel.*
- *Mercer Street Tunnel, a 6,200-foot-long, 14 foot, 8 inch inside diameter storage tunnel extending eastward beneath Mercer Street from Elliott Avenue West to a point near the intersection of Roy Street and Eighth Avenue North. The tunnel storage capacity of the*

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<sup>1</sup> John H. Glynn, Department of Ecology, to Judy Cochran, Project Manager at King County, 19 October 1998.

*tunnel would be approximately 7 million gallons at elevation 90 and 7.75 MG at elevation 95.*

- *Elliott West CSO Control Facility. A 250-million-gallon-per-day pump station and CSO treatment system, located at the west portal of the tunnel, providing removal of floatable objects, chlorine disinfection, and dechlorination.*
- *A new 96-inch-diameter outfall to discharge disinfected CSO flows from the Elliott West CSO Control Facility into Elliott Bay.*
- *Extension of the existing Denny Way CSO outfall with a 96-inch diameter outfall to discharge untreated and non-disinfected CSO flows into Elliott Bay.*



Figure 1. Denny Project Diagram<sup>2</sup>

The purpose of the project is to reduce combined sewer overflows (CSOs) to south, east, and west Lake Union and to Elliott Bay at the existing Denny Way Regulator Station. The facility plan describes different operating modes for the facility depending on the magnitude of the rain event. The operating modes are as follows<sup>3</sup>:

- **Dry Weather Operation.** Under dry weather conditions, no flow would be diverted into the planned facilities. Flows would continue to flow through the existing Lake Union Tunnel and other conveyance facilities, be directed to the Elliott Bay Interceptor, and be treated at the West Point plant.
- **Tunnel Storage.** During storm conditions, water surface elevations would rise to a point where they exceed established elevations at the Lake Union Tunnel Regulator, Central Trunk Diversion Structure, and/or Denny Way Diversion Structure, and flow would begin to be diverted from these structures into the Mercer Street Tunnel, where they

<sup>2</sup> <http://dnr.metrokc.gov/wtd/dennyway/project/facilities.htm>

<sup>3</sup> King County and City of Seattle, „Denny Way/Lake Union.CSO Control Facilities Plan, July, 1998.

would be stored. After the storm, when capacity is available in the Elliott Bay Interceptor, the stored flows would be conveyed to the West Point Treatment Plant. Tunnel storage would be required during any storm that currently results in an overflow at the Denny Way Regulator Station or Lake Union CSOs.

- **CSO Treatment.** Treated discharge would occur when tunnel storage reaches its capacity and no additional flows are being accepted at the Interbay Pump Station. Flow would be pumped from the downstream end of the tunnel into the floatable-control channel. The effluent would flow through mechanical screens to remove floatable materials, then into the effluent channel, where it would be injected with sodium hypochlorite for disinfection. From the effluent channel, the treated effluent would flow to the new Elliott West Outfall, where it would be injected with sodium bisulfite to neutralize residual chlorine before discharge into Elliott Bay.
- **Overflow.** The CSO treatment plant capacity is planned for 250 MGD, which is expected to handle a one-event-per-year storm. Larger storm events would cause flows in excess of a flow rate of 250 MGD; the storage/treatment system would not be adequate to entirely handle these storms, and untreated discharge would occur at the Denny Way Regulator Station via the extended Denny Way CSO Outfall. Flows discharged through the outfall extension would not receive floatables control or disinfection. However, discharge would continue through the Elliott West Outfall, with floatables control and disinfection.
- **Tunnel Drawdown.** Following a CSO event, flows stored in the tunnel would be drawn down via pumping to the Elliott Bay Interceptor and conveyance to the West Point plant for treatment.
- **Emergency Mode.** Emergency operation would occur under conditions of severe system overload or system shutdown in part or whole. All regulator gates would open fully except the Lake Union regulator, and most drain and bypass gates would remain closed. The flows would discharge into the Elliott Bay Interceptor and the two Denny Way CSO outfalls without treatment.

Henderson/MLK CSO Treatment and Storage Facility-

As described in the Ecology's Facility Plan approval letter dated March 5, 2002<sup>4</sup>, this facility includes the following:

- *Upgrade Henderson Street Pumping Station from 10 to 20 MGD*
- *Construct 3,100-ft long 14-foot 8-inch diameter tunnel from South Norfolk St. to South Henderson St. and ML King Way.*
- *Instrumentation improvements from the Henderson Pumping Station to the Norfolk Regulator*
- *Parallel 20-inch diameter forcemains from Henderson Pumping Station to the ML King Regulator*

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<sup>4</sup> Kevin C. Fitzpatrick, Department of Ecology, Rick Andrews, Project Manager at King County, 5 March 2002.



- 72-inch tunnel overflow from existing tunnel to the Norfolk Outfall
- Other improvements as needed

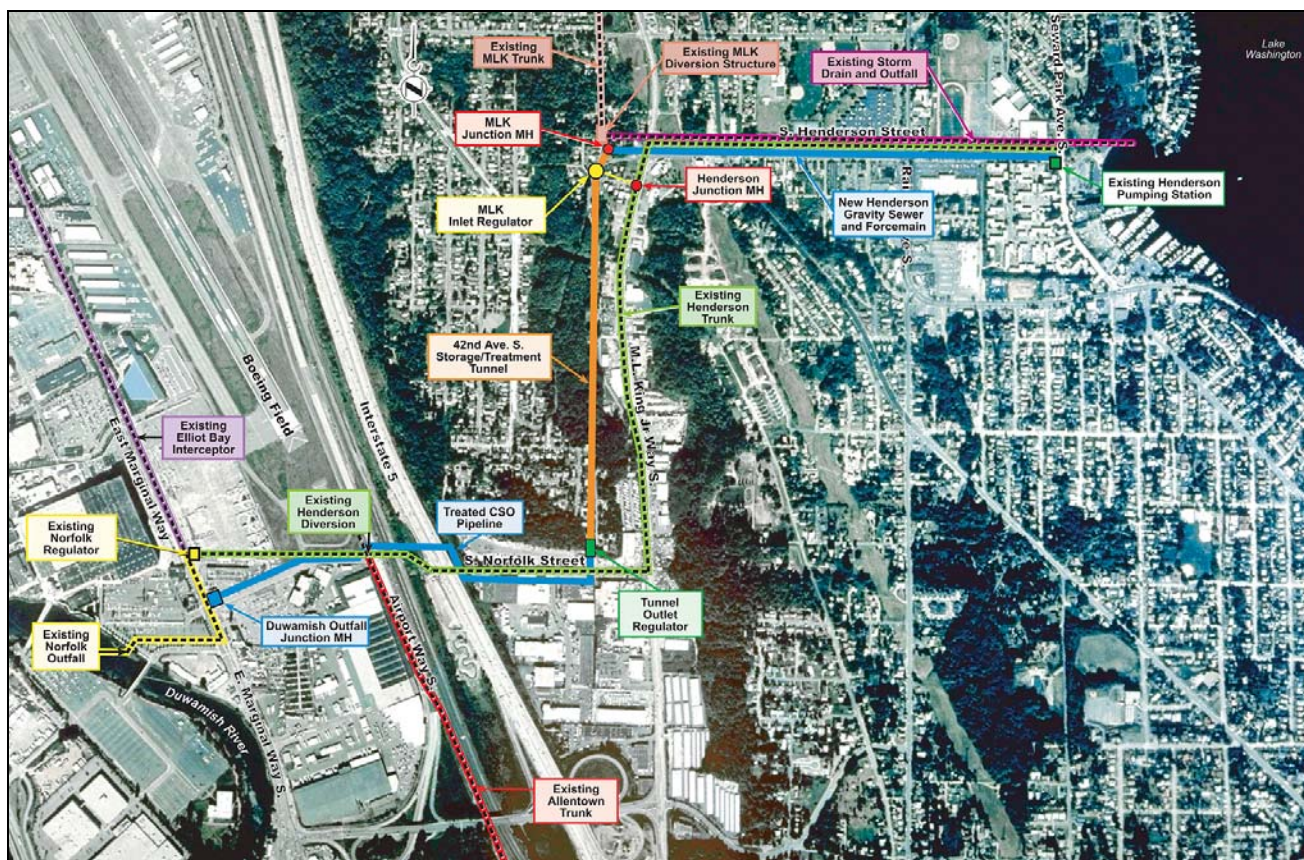


Figure 2. Henderson Project Diagram<sup>5</sup>

The purpose of the project is to reduce combined sewer overflows (CSOs) to Lake Washington and the Duwamish River. The facility plan describes different operating modes for the facility depending on the magnitude of the rain event. The operating modes are as follows:

- **Inlet Regulator Operation.** The level in the Henderson trunk line is continuously monitored. When the level reaches a specified set point, the modulating gate closes causing wastewater to back up into the regulator. Wastewater then overflows the weir and flows into the tunnel. The flow rate of wastewater into the tunnel is calculated based on the weir equation which is a function of the height of water flowing over the weir. The wastewater that flows into the tunnel is disinfected using Sodium Hypochlorite. The flow rate of addition of Sodium Hypochlorite is in proportion to the flow of wastewater into the tunnel.
- **Storage Mode.** The tunnel was designed to provide storage of waste water during peak flow events. The level in the trunk line is monitored. When the trunk line is below a specified set point, the modulating drain valve opens and slowly drains the tunnel. The

<sup>5</sup> provided by King County Wastewater Treatment Division

tunnel is drained such that the stored flows can be pumped to the secondary treatment plants, primarily to the South Treatment Plant with a small percentage of the stored flows going to the West Point Treatment Plant. After draining, the tunnel can be flushed from the inlet regulator to flush out settled solids and allow the solids to be pumped to the secondary treatment plants.

- **Treated CSO.** In the event that the tunnel is filled and wastewater continues to flow into the tunnel, the wastewater will overflow the discharge weir and be discharged through the Norfolk outfall as a treated CSO discharge to the Duwamish River. The flow rate of primary treated and chlorinated wastewater flowing out of the CSO Storage and Treatment Facility is calculated based on the weir equation which is a function of the height of water flowing over the weir. The overflow flow is dechlorinated with the addition of Sodium Bisulfite. The flow rate of addition of Sodium Bisulfite is in proportion to the flow of treated wastewater flowing out of the tunnel.

## **DISCHARGE OUTFALL**

### *Elliott West CSO Storage and Treatment Facility-*

The new Elliott West Outfall will discharge treated CSO flows from the Elliott West CSO Facility. The outfall is a 96-inch diameter outfall which discharges 400 feet offshore at -60 feet MLLW. The outfall is fitted with a 90-inch Tideflex valve which opens larger as the flow increases. The effective diameter of the valve at a discharge rate of 98 MGD would be 1.35 meters (53 inches). The treated and disinfected and dechlorinated effluent is discharged from the facility via the Elliott West Outfall into Elliott Bay.

In addition to the new outfall, the existing Denny CSO outfall was extended such that the 120-inch outfall is now submerged and discharges 100 feet offshore at -20 MLLW. Untreated CSO will be discharged from the Denny Regulator Station via the Denny CSO outfall into Elliott Bay during a storm that exceeds the capacity of the tunnel and the Elliott West facility.

### *Henderson/MLK CSO Treatment and Storage Facility-*

Treated CSO flow from the Henderson /MLK CSO Facility will be discharged through the existing Norfolk outfall. The Norfolk outfall is located on the north bank of the Duwamish River approximately at river km 10.5. The 84-inch diameter outfall approaches the river bank at a 90-degree angle to the river flow and is flush with the bank. There is a flap gate on the end of the pipe that is assumed to be completely open during discharge events.<sup>6</sup>

The treated and disinfected and dechlorinated effluent is discharged from the facility via the Norfolk Outfall into the Duwamish River.

## **RESIDUAL SOLIDS**

It is anticipated that both the storage tunnel for the Elliott West and the Henderson/MLK CSO Treatment Facilities will allow solid material to settle out inside the tunnel. Both tunnels have

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<sup>6</sup> King County, Department of Natural Resources, Wastewater Treatment Division, Henderson/M.L.King CSO Control Facilities Plan, February, 2002. Chapter 22, pg.2.

been designed so that solids will be flushed out of the tunnels and then solids will be pumped to the secondary treatment plants (West Point and South Plant) for further treatment and removal following the storm events.

The treatment facilities at West Point and South Plant remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the secondary clarifier are treated by digestion and land applied under a Biosolids permit.

#### *PERMIT STATUS*

There has been no previous permit for discharges from the Elliott West or the Henderson/MLK CSO Treatment Facilities.

#### *SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

There has been no previous permit for discharges from the Elliott West or the Henderson/MLK CSO Treatment Facilities.

#### *WASTEWATER CHARACTERIZATION*

No data is yet available regarding the characterization of the treated effluent leaving the Elliott West or the Henderson/MLK CSO Treatment Facilities. Priority pollutant monitoring is required by the permit throughout the duration of the permit. This monitoring data will be used to characterize these discharges prior to the next permit cycle.

### **PROPOSED PERMIT LIMITATIONS**

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220, 173-221 and 173-245 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the letters of request for permit modification. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in

the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

### *DESIGN CRITERIA*

**TABLE 1: DESIGN PARAMETERS**

Parameter	Elliott West	Henderson/MLK
Tunnel Diameter,	14-foot, 8-inch	14-foot, 8-inch
Tunnel Length	6,200 feet	3100 feet
Total Volume (Million Gallons)	7.2	4

### *TECHNOLOGY-BASED EFFLUENT LIMITATIONS*

At-site treatment of CSO must provide “primary treatment” which is defined in WAC-173-245-020(16) as “any process which removed at least 50% of the total suspended solids from the waste stream, and discharges less than 0.3 ml/L/hr of settleable solids”.

**TABLE 2: TECHNOLOGY-BASED LIMITS**

Parameter	Limit
TSS	50% removal, annual average
Settleable Solids	0.3 ml/L/hr, annual average

### *SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

### **NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE**

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

## **NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH**

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

## **NARRATIVE CRITERIA**

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

## **ANTIDegradation**

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of the receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

## **CRITICAL CONDITIONS**

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

## **MIXING ZONES**

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.



The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

## DESCRIPTION OF THE RECEIVING WATER

### Elliott West CSO Storage and Treatment Facility-

The facility discharges to Elliott Bay<sup>7</sup> which is designated as a Class **A** receiving water in the vicinity of the outfall. Another nearby point source outfall includes the Denny Way CSO outfall. Characteristic uses include the following:

fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

### Henderson/MLK CSO Treatment and Storage Facility-

The facility discharges to the Duwamish River which is designated as a Class **B** receiving water in the vicinity of the outfall<sup>8</sup>. Other nearby point source outfalls includes various stormwater outfalls. Characteristic uses include the following:

fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; secondary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

## SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Parameter	Elliott West CSO Storage and Treatment Facility	Henderson/MLK CSO Storage and Treatment Facility
Receiving Water	Elliott Bay, <b>Class A, Marine</b>	Duwamish River, <b>Class B, Marine</b> <sup>9</sup>
Fecal Coliforms	14 organisms/100 mL maximum geometric mean, and not have more than 10% of all samples obtained for calculating the geometric mean value exceeding 43 colonies/100 mL	100 organisms/100 mL maximum geometric mean, and not have more than 10% of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL.

<sup>7</sup> WAC 173-201A-140(8)

<sup>8</sup> WAC 173-201A-130(37)

<sup>9</sup> At the location of the Norfolk outfall the Marine WQS criteria apply since there is a high percentage of salt water present as shown in Bernhardt, J., and W. Yake, "The Impact of Renton Wastewater Treatment Plant on Water Quality of the Lower Green/Duwamish River" (Wa. State Department of Ecology, Jan. 1981), part II, pg. 16.

Parameter	Elliott West CSO Storage and Treatment Facility	Henderson/MLK CSO Storage and Treatment Facility
Dissolved Oxygen	6.0 mg/L minimum	5.0 mg/L minimum
Temperature	16°C maximum or incremental increases above background. No temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C.	19°C maximum or incremental increases above background. No temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C.
pH	7.0 to 8.5 standard units	7.0 to 8.5 standard units
Turbidity	less than 5 NTUs above background	less than 10 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)
Chlorine (Total Residual) Acute	13.0 µg/L	13.0 µg/L

#### CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

##### Elliott West CSO Outfall-

In estuaries, the maximum chronic mixing zone (CMZ) boundary is defined by Ecology as 200 feet plus the depth in any horizontal direction from the discharge port(s). The water depth at the Elliott West outfall is 60 feet, and therefore, Elliott West's CMZ boundary is defined as 260 feet. The AMZ is defined by Ecology as 10 percent of the CMZ distance. The AMZ boundary for the Elliott West outfall is 26.0 feet from the discharge port(s). King County ran the necessary computer model to determine the dilution ratio achieved under the critical condition at the edge of the acute mixing zone. King County ran the dilution model at flow rates ranging from 50-300 MGD and two current profiles. The dilution results were modeled at the edge of the chronic zone and the acute zone. The minimum chronic dilution ratio is 7.2:1. The modeling showed that lower flows and lower current speed resulting in greater dilution. The acute dilution factor achieved at critical conditions is 3.4.<sup>10</sup>

<sup>10</sup> email from Besty Cooper, NPDES Coordinator King County, to Karen Burgess, 15 February 2005. Plumes modeling for Elliott West Outfall by Beth Quinlan of Black & Veatch, Seattle.

Norfolk Outfall (Henderson/MLK CSO Treatment and Storage Facility)-

In rivers, the maximum chronic mixing zone (CMZ) boundary is defined by Ecology as 300 feet downstream plus the depth at critical flow conditions. The water depth at the Norfolk outfall is 12 feet, and therefore, Norfolk's CMZ boundary is defined as 312 feet downstream of the outfall. The AMZ is defined by Ecology as 10 percent of the CMZ distance. The AMZ boundary for the Norfolk outfall is 31.2 feet downstream from the outfall. King County ran the necessary computer model to determine the dilution ratio achieved under the critical condition at the edge of the acute mixing zone.<sup>11</sup>

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the computer models as described below. The dilution factors have been determined to be:

	<b>Elliott West Acute</b>	<b>Elliott West Chronic</b>	<b>Henderson/ MKL Acute</b>	<b>Henderson/ MKL Chronic</b>
Mixing Zone (feet)	26.0	260	31.2	312
Computer Model	PLUMES	PLUMES	CORMIX3	CORMIX3
Aquatic Life	<b>3.4</b>	<b>7.2</b>	<b>1.9</b>	<b>10.3</b>

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

Elliott West CSO Outfall-

BOD<sub>5</sub>--There is no technology-based effluent limitation for BOD<sub>5</sub> for an intermittent primary-treated discharge such as this one. Because this is a CSO discharge, the BOD will be more dilute than typical wastewater. Therefore, no effluent limitation for BOD<sub>5</sub> was placed in the proposed permit.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 9.0°C and the effluent temperature is 10.0°C. The predicted resultant temperature at the boundary of the acute mixing zone is 9.23°C and the incremental rise is 0.3°C.

<sup>11</sup> King County, Department of Natural Resources, Wastewater Treatment Division, Henderson/M.L.King CSO Control Facilities Plan, February, 2002. Chapter 22, pg.2.



Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for pH was placed in the proposed permit.

Fecal coliform--There is no specific technology-based limit for an intermittent primary-treated discharge such as this one. However, Ecology's technical guidance document states that 400 colonies per 100 ml is appropriate performance for an on-site CSO Storage and Treatment Facility.<sup>12</sup>

The use of a geometric mean limit is not readily applied to intermittent discharges due to the variable and infrequent nature of the discharge. The permittee submitted to Ecology historical data of the fecal coliform levels in the vicinity of this outfall. The permittee will continue to monitor fecal coliform in the vicinity of the outfall for the duration of this permit and provide that data to Ecology to evaluate at the end of the permit cycle. The Ecology guidance-based limit of 400 colonies per 100 ml is presumed to be protective of the water quality at this time.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

This is a new discharge which has not been accurately characterized at this time. The permit requires the permittee to monitor the discharge during the permit cycle and provide data to characterize the discharge for toxic pollutants prior to the next permit cycle.

The following toxic was determined to be present in the discharge: **chlorine**. Chlorine will be added to the discharge stream to provide for disinfection and the effluent will be subsequently dechlorinated. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for chlorine to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor 3.4.

Effluent limits were derived for **chlorine**, which were determined to have a reasonable potential to cause a violation of the Water Quality Standards. Effluent limits were calculated using methods from EPA, 1991 as shown in Appendix C.

The resultant effluent limits are as follows: Chlorine

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<sup>12</sup> Department of Ecology, *Criteria for Sewage Works Design*, December 1998, Page C3-21.

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Parameter	Monthly Average	Maximum of Daily Averages
Chlorine	NA	44 µg/L

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*Norfolk Outfall (Henderson/MLK CSO Treatment and Storage Facility)-*

BOD<sub>5</sub>-- Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for BOD<sub>5</sub> was placed in the proposed permit.

There is no technology-based effluent limitation for BOD<sub>5</sub> for an intermittent, primary treatment plant such as this one. The impact of BOD on the receiving water was modeled using the Streeter-Phelps model at critical condition and with the technology-based effluent limitation for BOD<sub>5</sub> for secondary treatment. The dissolved oxygen met the water quality standard. Refer to appendix C.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 6.5°C and the effluent temperature is 7.2°C. The predicted resultant temperature at the boundary of the acute mixing zone is 6.8°C and the incremental rise is 0.3°C.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for pH was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

Fecal coliform--There is no specific technology-based limit for an intermittent primary-treated discharge such as this one. However, Ecology's technical guidance document states that 400 colonies per 100 ml is appropriate performance for an on-site CSO Storage and Treatment Facility.<sup>13</sup>

The numbers of fecal coliform were modeled by simple mixing analysis using the chronic dilution factor of 10.3 and a water quality standard of 100 colonies per 100 ml. Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the guidance-based limit of 400. Therefore, the guidance-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent

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<sup>13</sup> Department of Ecology, *Criteria for Sewage Works Design*, December 1998, Page C3-21.

limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

This is a new discharge which has not been accurately characterized at this time. The permit requires the permittee to monitor the discharge during the permit cycle and provide data to characterize the discharge for toxic pollutants prior to the next permit cycle.

The following toxic was determined to be present in the discharge: **chlorine**. Chlorine will be added to the discharge stream to provide for disinfection and the effluent will be subsequently dechlorinated. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for chlorine to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor 1.9.

Effluent limits were derived for **chlorine**, which were determined to have a reasonable potential to cause a violation of the Water Quality Standards. Effluent limits were calculated using methods from EPA, 1991 as shown in Appendix C.

The resultant effluent limits are as follows: Chlorine

Parameter	Monthly Average	Maximum of Daily Averages
Chlorine	NA	39 µg/L

## HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge does not contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

## SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The sediment in the area of the Denny Way CSO outfall, the Elliott West outfall and the Norfolk outfall have a previous history of sediment contamination and have undergone previous clean up actions. King County provided to Ecology a summary of current information on the sediment quality and sampling in the vicinity of the two CSO treatment outfalls.<sup>14</sup>

<sup>14</sup> Memo from Besty Cooper, NPDES Coordinator King County, to Karen Burgess, 13 January, 2005, Re: Current Information on Sediment Quality and Sampling in the vicinity of the Norfolk and Denny Way outfalls.

The Department has been unable to determine at this time the potential for this discharge to cause a violation of sediment quality standards. If the Department determines in the future that there is a potential for violation of the Sediment Quality Standards, an order will be issued to require the Permittee to demonstrate that either the point of discharge is not an area of deposition or, if the point of discharge is a depositional area, that there is not an accumulation of toxics in the sediments.

### **MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

#### ***LAB ACCREDITATION***

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*.

### **OTHER PERMIT CONDITIONS**

#### ***REPORTING AND RECORDKEEPING***

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

#### ***OPERATION AND MAINTENANCE (O&M)***

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

#### ***RESIDUAL SOLIDS HANDLING***

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of solid material captured at CSO Treatment Facilities will be pumped to the secondary treatment plants (West Point and South Plant).

### *EFFLUENT MIXING STUDY*

The King County as provided the Department with data and modeling results that were used to estimate the amount of mixing of the discharge within the authorized mixing zone to determine the potential for violations of the Water Quality Standards for Surface Waters (Chapter 173-201A WAC). There are not further requirements at this time for the permittee to more accurately determine the mixing characteristics of the discharge.

### *COMBINED SEWER OVERFLOWS*

In accordance with RCW 90.48.480 and Chapter 173-245 WAC, proposed permit Condition S.12 requires the Permittee to submit an annual Combined Sewer Overflow (CSO) report and to update its CSO reduction plan at the time of permit renewal. The annual report must include a summary of operation of each of the CSO Treatment Facilities including information about compliance with permit limits that are applied on an annual basis.

### *OUTFALL EVALUATION*

Proposed permit condition S.14 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. An inspection is required only of the **West Point Treatment Plant outfall**. The Department will evaluate the need for the inspection of CSO Treatment Plant outfalls during the next permit cycle.

### *GENERAL CONDITIONS*

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

## **PERMIT ISSUANCE PROCEDURES**

### *PERMIT MODIFICATIONS*

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

### *RECOMMENDATION FOR PERMIT ISSUANCE*

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this modified permit be issued to be effective through the expiration date of the originally issued permit.

## REFERENCES FOR TEXT AND APPENDICES

### Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

### Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

### Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

### Washington State Department of Ecology.

Laws and Regulations( <http://www.ecy.wa.gov/laws-rules/index.html> )

Permit and Wastewater Related Information  
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

### Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

### Water Pollution Control Federation.

1976. Chlorination of Wastewater.

### Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

## **APPENDIX A--PUBLIC INVOLVEMENT INFORMATION**

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department will publish a Public Notice of Draft (PNOD) on March 18, 2005, in *Seattle Times* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Northwest Regional Office  
3190 – 160<sup>th</sup> Avenue SE  
Bellevue, WA 98008

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 425-649-7201, or by writing to the address listed above.

This permit and fact sheet were written by Karen Burgess.

## **APPENDIX B--GLOSSARY**

**Acute Toxicity**--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

**AKART**-- An acronym for “all known, available, and reasonable methods of prevention, control, and treatment”.

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation** --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

**Average Weekly Discharge Limitation** -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**CBOD<sub>5</sub>** – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celcius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD<sub>5</sub> is given in 40 CFR Part 136.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.



**Chronic Toxicity**--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Combined Sewer Overflow (CSO)**--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring** --Uninterrupted, unless otherwise noted in the permit.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Dilution Factor**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

**Engineering Report**--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial User**-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Infiltration and Inflow (I/I)**--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

**Interference** -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

**Major Facility**--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**Minor Facility**--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Mixing Zone**--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

**Pass through** -- A discharge which exits the POTW into waters of the-State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Potential Significant Industrial User**--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Significant Industrial User (SIU)**--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority\* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority\* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

\*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Suspended Solids (TSS)**--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

## **APPENDIX C--TECHNICAL CALCULATIONS**

Several of the Excel<sup>®</sup> spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at <http://www.ecy.wa.gov/programs/wq/wastewater/index.html>

## **APPENDIX D--RESPONSE TO COMMENTS**